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БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»

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104-ї підсумкової науково-практичної конференції
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Конференція внесена до Реєстру заходів безперервного професійного розвитку, які проводитимуться у 2023 році №5500074

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охорони здоров'я. Грант на будівництво в розмірі 487,5 млн. шекелів (138 млн. дол. США) буде виплачено концесіонеру чотирма частинами по мірі реалізації основних етапів.

Висновки. Залучення приватного бізнесу є важливою складовою функціонування сучасної системи охорони здоров'я в розвинених країнах світу, яку слід запровадити в Україні.

СЕКЦІЯ 22
ФІЗИЧНІ ДОСЛІДЖЕННЯ В МЕДИЦИНІ

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SIMPSON'S PARADOX IN BIOSTATISTICS

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Introduction. The art of data science is to see beyond the data i.e to use and develop methods and tools to gain insight into what this hidden reality looks like. Simpson's Paradox demonstrates the importance of scepticism and interpretation of data about the real world and the danger of oversimplifying a more complex truth by trying to see the whole story from a single data point of view.

The aim of the study is considering cases of Simpson's paradox in medical researches.

Material and methods. Analysis of the presented researches.

Results. Simpson's paradox is a paradox in statistics when, in the presence of two groups of data, the equally directed dependencies observed in each and when these groups are combined, this dependence either disappears or changes its direction to the opposite. This phenomenon has long been recognized as theoretically possible, especially in the field of medical statistics but there are few real examples in the literature. Due to the intuition, one can discover hidden variables through exploratory data analysis. The researcher must then decide whether to split the data into separate distributions or pool the data. The right decision is entirely situational, which is one of the reasons why biostatistics exists at the intersection of statistics and medicine: the scientist needs to know the data and, most importantly, what result they want to get from the data in order to choose the right approach.

Simpson's paradox can complicate the process of decision-making. One can scrutinize, regroup and resample the data as much as possible, yet if several different conclusions can be drawn from all the different categories, then choosing which grouping to draw conclusions from to gain insights and develop strategies is an important and challenging problem. A scientist needs to know what exactly they are looking for and choose the best point of view that will give a fair reflection of the truth.

Conclusions. During the statistical analysis of medical data, it is necessary to take into account the possibility of Simpson's paradox, which can significantly change the conclusions of the study.

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ELECTRICAL IMPEDANCE SPECTROSCOPY AS A METHOD OF POLYMER COMPOSITES ANALYSIS

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Introduction. Considerable interest has been attracted to polymer composites in recent decades. Size-dependent properties of nanoparticles cause great potential for many applications of polymer composites. The reason is that polymer matricescanbe easily processed and one can control the growth and morphology of nanoparticles. Shape and size of inorganic nanoparticles due to high surface-to-volume ratio are predetermining factors for polymer composites properties.

The aim of the study. To explain usage of electrical impedance spectroscopy as a method of polymer composites analysis among other methods within complex investigation.

Material and methods. Various analysis methods are used to investigate properties of polymer composites. X-ray diffraction dependencies are studied in order to monitor the formation of the nanocomposites. The X-ray diffraction peak is assigned to reflection at a specific angle corresponding to the interlayer spacing. Upon modification of polymer, the original peak shifts corresponding changes in interlayer spacing.The interactions among atoms or ions in polymer electrolyte under the investigation may induce changes in the vibrational modes of atoms and chains of the polymer. Fourier Transform Infrared (FTIR) sprectroscopyis used to analyze such changes.The glass transition temperature T_g is an important parameter for identifying the amorphousness of the semicrystalline solids.The Differential Scanning Calorimetry (DSC) thermogram of composites reflects the phase transition of polymer composite. The shift of T_g towards relatively lower temperatures with increasing the concentration of nanoparticles in the polymer composite reveals the disruption of the degree of crystallinity of the host polymer which facilitates the micromovement ofparts of polymer.

Results. Direct current (DC) conductivity studies can be used to determine mechanisms of DC in polymer composites. Conductive properties depend on nanoparticle concentration, particle size, dispersion, polymer-nanoparticle interaction. Temperature dependencies of DC conductivity allow determining the energy of activation of conductivity. Value of the conductivity activation energy depends on the conduction level of the organic phase (host polymer) and inorganic phase (nanoparticles). On the one hand, the presence of nanoparticles reduces the degree of crystallinity of the polymer matrix and subsequently increases the free volume, which enhances charge carrier mobility. On the other hand, the increase of nanoparticles concentration means an increase of polymer heterogeneity, which results in an increase of nanoparticle-polymer interface resistance. As the nanoparticles concentration reaches its critical value, the conductivity of polymer composite can be explained by the formation of conducting nanoparticles aggregations. A competition of the interfacial polarization and conductivity enhancement by introducing inorganic nanoparticles leads to the conductivity saturation and minimization of the activation energy.Electrical impedance spectroscopy is performed in order to analyze relaxation mechanisms in polymer composites. The frequency dependence plot of total conductivity of polymer composites is studied in order to reveal regions of frequency independency and regions of frequency dependency. These two regions are separated with transition region at certain frequency defined as the hopping rate. This behavior arises from the competition of both DC conductivity and conductivity due to the ionic polarization besides the electronic one. The hopping rate of Arrhenius' plot provides opportunity to deduce value of energy activation of hopping conduction mechanism in polymer composites. Electrical impedance frequency dependencies can be represented in other plots. The Cole-Cole diagramcan be used to extract values of the relaxation time of polarization in polymer composites, which in turn, allow determining hopping distances for polymer composites.

Conclusions. Dielectric relaxation is a result of the reorientation process of dipoles in the polymer chains. Ionic motion and polymer segmentation motion are strongly coupled for electrolyte which canmanifest as a single peak in the imaginary part of electrical modulus M'' spectra with no corresponding feature in dielectric spectra.

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INNOVATIVE STRUCTURAL ELEMENTS OF BONE PLATES FOR FRACTURE OSTEOSYNTHESIS

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Introduction. According to WHO, injuries related to fractures rank 4th in the world. Domestic statistics indicate that every year in Ukraine, about 97,500 Ukrainians are injured due to falls. The bones of the skull, spine and limbs are most injured. High-energy injuries associated with the effect on the human body of high speeds, temperatures, currents, for example, a traffic accident, a fall from a height, a blow, a gunshot wound, constant bone overload, which affects one in three